

**REMARKS**

Favorable reconsideration of this application, in light of the preceding amendments and following remarks, is respectfully requested. Claim 22 is pending in this application. Claim 22 is amended and claim 23 has been cancelled. Claim 22 is the sole independent claim.

**Interview Summary**

Initially, Applicants wish to thank the Examiner for the courtesies extended to Applicant's representative Erin G. Hoffman, Reg. No. 57,752, during the telephonic interview of October 18, 2011. The Examiner tentatively agreed that the claim amendments shown in the preceding section of this amendment would overcome the current rejections as detailed below.

**Rejections under 35 U.S.C. § 103**

**Cabral/Seidl/Chang**

Claim 22 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,982,230 to Cabral Jr., et al. in view of U.S. Patent Publication No. 2002/0014647 to Seidl et al. and U.S. Patent No. 3,996,021 to Chang et al. Applicants respectfully traverse this rejection for the reasons detailed below.

On pages 2-3 of the Office Action, the Examiner states that Cabral teaches (in Figure 29 and related text) a capacitor of a semiconductor device, the capacitor comprising a lower electrode 33 formed on a semiconductor substrate 30; a first dielectric film 34 formed on the lower electrode; an upper electrode 35 formed on the first dielectric film; and a second dielectric film 34 between the upper electrode and the film, wherein the second dielectric film is an HfO<sub>2</sub> layer, a ZrO<sub>2</sub>, or an STO layer, and wherein the second dielectric film is directly in contact with the upper electrode.

However, the Examiner admits that Cabral does not teach using an AHO  $((Al_x, Hf_{1-x})O_y)$  film as the first dielectric film. According to the Examiner, Chang allegedly teaches the advantages of using an AHO film, and Seidl teaches in figure 1n and related text a capacitor comprising a lower electrode 60, an AHO  $((Al_x, Hf_{1-x})O_y)$  film 70 formed directly on the lower electrode, and an upper electrode 80 formed on the AHO film. Therefore, it allegedly would have been obvious to a person of ordinary skill in the art at the time the invention was made to replace the first dielectric film in Cabral's device with an AHO  $((Al_x, Hf_{1-x})O_y)$  film in order to improve the device characteristics.

Applicants submit that neither Cabral, Seidl, Chang or the combination thereof teach or suggest at least "wherein the lower electrode, the oxidation barrier film and the AHO film include a recess above the conductive plug, and the recess is filled by the upper electrode" as recited in amended claim 22.

Furthermore, Applicants maintain the position that one of ordinary skill in the art would not have been motivated to modify Cabral's capacitor to include the AHO layer of Chang, because Chang's AHO film would be used to coat a metal article in Cabral, which is not suggested because the technical field of Cabral is not related to coating a metal article (see Example 10 of Chang, which states, the coating prepared in this example would protect the **nickel-base superalloy** longer than a coating without Hf).

Accordingly, the disclosure of Chang would not have provided motivation to one of skill in the art to replace the first dielectric film 34 of Cabral with the AHO layer of Chang, because Chang does not teach any advantages to an AHO layer being used as a dielectric film in a capacitor. See MPEP § 2143.01 ("The mere fact that references can be combined or modified does not render the resultant combination obvious

unless the results would have been predictable to one of ordinary skill in the art". *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 82 USPQ2d 1385 (2007)).

For all of the above reasons, Cabral, Chang and Seidl, whether alone or in combination, fail to render obvious the limitations of claim 22.

The Applicants, therefore, respectfully request that the rejection to Claim 22 under 35 U.S.C. § 103(a) be withdrawn.

**Cabral/Chang/Seidl/Chooi**

Claim 23 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Cabral Jr., et al., Chang et al., Seidl et al., and further in view of U.S. Patent No. 6,486,080 to Chooi et al.

Claim 23 is cancelled, and therefore, the rejection of claim 23 is now moot.

The Applicants, therefore, respectfully request that the rejection to Claim 23 under 35 U.S.C. § 103(a) be withdrawn.

**CONCLUSION**

In view of the above remarks and amendments, the Applicants respectfully submit that each of the pending objections and rejections has been addressed and overcome, placing the present application in condition for allowance. A notice to that effect is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to contact the undersigned.

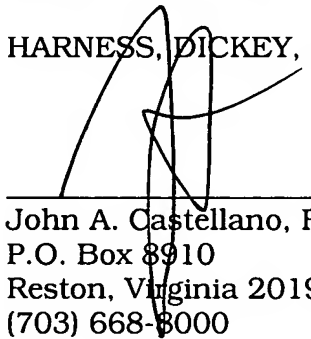
Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Erin G. Hoffman, Reg. No. 57,752, at the telephone number of the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

HARNESS, DICKEY, & PIERCE, P.L.C.

By

  
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